



Scientific Paper Session Schedule
2017 Colorado Field Ornithologists Annual Convention
Steamboat Springs, Routt County • June 3, 2017

1:30 p.m.—Introduction to the paper session. Christy Carello.

1:35 p.m.—Effect of Douglas-fir beetle and patch size on avian diversity in Douglas-fir forests in the Gunnison Basin, Colorado. Marcel Such and Patrick Magee.

1:50 p.m.—Geographic variation in song complexity in the Rock Wren, *Salpinctes obsoletus*. Nadjé Najar and Lauryn Benedict.

2:10 p.m.—Mechanisms for minimizing nest predation risk in grassland songbirds. Amber Carver, David Augustine, Susan Skagen, Angela Dwyer, Diana Tomback, and Michael Wunder.

2:25 p.m.—Avian species Abundance in Burned and Unburned Shrubland and Grassland on South Table Mountain in Golden, Colorado. Kayla Joseph, Heather Pernell, and Christy Carello.

2:40–3:00 p.m.—*break*.

3:00 p.m.—Forest successional stage and habitat value for migrating and resident birds on the Pacific slope of Monteverde, Costa Rica. Vinson Turco, Stacey Fuller, Kevin Dykstra, and Christy Carello.

3:15 p.m.—Cottonwood stand composition in Chatfield State Park: A bird's eye view. Erin Bissel.

3:35 p.m.—The Gray Flycatcher, *Empidonax wrightii*, in Colorado: A stealth migrant on the increase in Front Range metro region. Ted Floyd.

3:50 p.m.—Concluding remarks. Christy Carello.

Avian Species Abundance in Burned and Unburned Shrubland and Grassland on South Table Mountain in Golden, Colorado.

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Fire can dramatically transform a landscape. These changes can have both negative and positive effects on local avian communities. On Aug. 2, 2016, a lightning strike ignited a wildfire on South Table Mountain in Golden, Colorado, burning approximately 12 hectares of shrub and grassland. We took advantage of this opportunity, using South Table Mountain as an experimental site to observe and document differences in avian species composition, abundance, and behavior found in burned and unburned shrub and grassland areas. We hypothesized that a burn in a grassland area will have more of an impact on avian habitat utilization than a burn occurring in shrubland. Observations were conducted biweekly over the period of three months taking place in August–November 2016 in four plots on the mountain using twenty-minute point counts at each observation site. We did not find a statistically significant difference in avian abundance in the control compared to the burned plots, however we did find a difference in species richness. We found that more species were found in the burned grassland compared to the control and that less species were found in the burned shrubland compared to the control. In addition we found that birds vocalized and foraged more in the burned grassland habitat. Finally, when we analyzed the data for the most frequently seen species, the Mountain Bluebird, *Sialia currucoides*, we found statistically more bluebirds in the burned grassland site. Overall it appears that a short duration fire in a grassland habitat is beneficial to birds compared to a similar fire in a shrubland habitat.

Cottonwood stand composition in Chatfield State Park: A bird's-eye view.

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The Chatfield Reservoir Reallocation Plan will result in periodic or permanent inundation of 586 acres of shoreline habitat at Chatfield State Park. This study examined how birds currently utilize the riparian forest communities along the Platte River and Plum Creek most likely to be lost or modified during implementation of the plan. Broad-leaf cottonwood, *Populus deltoides*, is the dominant tree cover and occurs in two distinct age categories: (1) younger, dense stands and (2) older, open legacy trees. We hypothesized that avian utilization may differ between legacy and stand sites because of differences in tree density. In Fall 2015 and Summer 2016, bird counts were conducted at 10 sites in each age category. In 2015, data on diameter at breast height (DBH), tree height, and tree density were collected; in 2016, canopy cover and elevation data were collected. Initial analysis suggests that bird usage may differ between legacy and stand sites and be related to differences in stem density. In 2017, data will be collected using a modified BBIRD vegetation sampling protocol. This includes canopy cover, diameter at breast height, nearest neighbor species type, percent ground cover, tree height, and nested quadrats with species richness and stem density in the understory. We will also expand surveys to include areas along the Platte River below the dam, where flooding will not occur, as well as sites at Sugar Creek, identified in the remediation plan as a site appropriate for the endangered Preble's meadow jumping mouse currently found at Chatfield State Park.

Mechanisms for minimizing nest predation risk in grassland songbirds.

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Niche divergence arises from natural selection, but mechanisms of selection are often poorly understood. We study divergence in breeding-site selection and parenting behavior, using ground-nesting grassland songbirds as a model system. The North American Great Plains is a highly dynamic ecosystem. Songbirds that breed there have evolved in the context of unpredictable resources and threats. Most Great Plains songbirds nest on the ground, but species nesting in the same habitat patch place their nests in different microhabitat. Species also exhibit different parenting strategies. Predation is the leading cause of nest failure in birds, so differences in nest-site vegetation should be driven by an interaction between predation dynamics and parent behavior. In 2014–2016, we

studied species nesting at the Central Plains Experimental Range in northern Colorado. We located 1,225 nests of 11 species and measured vegetation at 810 of those nests. We found that attributes that differed most among species, e.g., cover by midgrass or dead vegetation, were not the attributes that best explained variation in nest survival probability, e.g., cover by cactus. This underscores the importance of studying the extent to which parent birds compensate for adverse nest-site microhabitat through altered behavior. We will address this question in 2017 through video monitoring and simulated predation. We will also continue studying site fidelity in McCown's Longspur, *Rhyncophanes mccownii*, because this strategy has important implications for species responsiveness to environmental variability. Preliminary results reveal that some individuals have high site and territory fidelity despite adverse breeding conditions, suggesting limited responsiveness to environmental change.

The Gray Flycatcher, *Empidonax wrightii*, in Colorado: A stealth migrant on the increase in Front Range metro region.

Ted Floyd—*American Birding Association*

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Reports of the Gray Flycatcher, *Empidonax wrightii*, have increased in recent years in Colorado's Front Range metro region. Why? Is it because observers are better at identifying Gray Flycatchers than they used to be? Or is it because of a real increase in the number of Gray Flycatchers migrating through the region? Although the former likely explains part of the increase, the species also has been predicted to experience a range shift because of climate change. Thus, the Gray Flycatcher may be following in the footsteps of the Black-chinned Hummingbird, *Archilochus alexandri*, Eastern Phoebe, *Sayornis phoebe*, and American Bushtit, *Psaltriparus minimus*, which in the past decade have rapidly expanded into the Front Range metro region and beyond. As "empids" go, the Gray Flycatcher is relatively easy to identify; birders equipped with basic knowledge about how to identify migrant Gray Flycatchers will be essential for documenting their apparent ongoing increase during migration. Will the Gray Flycatcher begin nesting in the region? That is another question that birders are poised to answer.

Geographic variation in song complexity in the Rock Wren, *Salpinctes obsoletus*.

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Bird song ranges from simple to exceedingly complex, and much research effort has been spent on elucidating mechanisms driving its form. Researchers have proposed song complexity to be associated with geography or migratory behavior—an interesting idea, but one for which the evidence is equivocal. Most authors invoke sexual selection as the factor driving the observed patterns, but in varied ways, and at least eleven distinct hypotheses have been proposed to explain how geography and song complexity are related. The Rock Wren, *Salpinctes obsoletus*, is an ideal species with which to ask how latitude, migration, and song complexity interact because they have a wide distribution, migrant and non-migrant populations, and large variable song repertoires. Despite wide variation in song repertoire sizes recorded from eleven populations (six sedentary, five migratory), song complexity does seem to vary with latitude and migratory status, albeit not in a way previously predicted. Morphological measures also vary with latitude and migration, implying there is appreciable selection pressure from these forces which may be reflected in rock wren song repertoires. Overall these findings may support the basic idea that sexual selection pressure changes with latitude or migration.

Effect of Douglas-fir beetle and patch size on avian diversity in Douglas-fir forests in the Gunnison Basin, Colorado

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The Gunnison Basin's Douglas-fir, *Pseudotsuga menziesii*, stands are under attack by an insect parasite, the Douglas-fir beetle, *Dendroctonus pseudotsugae*, resulting in widespread tree mortality. In this study, we analyzed the effect of this mortality on avian diversity and communities in Douglas-fir stands. Additionally, the discrete patches that are naturally formed in our study region provide a prime application of the island biogeography theory, by which we hypothesized that larger stands

will have higher species diversity than do the smaller stands. Field work was completed in August 2016, with surveys in forty-seven patches of Douglas-fir in the Gunnison Basin from which we collected one to two rounds of bird surveys and also basic forest structure metrics. From these data we were able to analyze the effect of tree health, tree density, and patch size on predicting species diversity. We found a strong yet complex relationship between forest health and density dictating avian species diversity, with an independent relationship between patch size and diversity, following the predictions of island biogeography theory. The data from this study will be valuable to local land management agencies and also private landowners in the management of Douglas-fir stands, in the context of their ecological value in the face of a changing climate.

Forest successional stage and habitat value for migrating and resident birds on the Pacific slope of Monte Verde, Costa Rica.

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More than 900 species of birds are known from Costa Rica, of which 350 are North American migrants. Forested areas are a critical resource for these birds. In the cloud forest region of Costa Rica, reforestation of agricultural land has become a priority in order to create habitat for birds. The objective of our study was to evaluate the use of migratory and resident birds in cattle pasture and coffee plantations after 8 years of reforestation. We conducted point counts and mist-netting in these reclaimed areas as well as in a reference forest to determine abundance and species richness of birds. We found that reforested coffee plantations were not statistically different from the reference forest, but that the cattle pasture had significantly fewer birds and birds species than the reference forest. In addition, we found a statistical difference between migratory and resident species in the reference forest. Our results show that cattle pasture does not recover as quickly as coffee plantations, and that in mature forests, resident species outnumber migrants. These results are important in terms of prioritizing land for reclamation.